SERVICE MANUAL
BENYTONE
MCD3000/3000B
Stereo Cassette Deck

SPECIFICATIONS

Track System	4-track 2-channel, stereo recording and playback
Tape Speed	1-7/8 i.p.s. (4.75 cm/sec.)
Wow and Flutter	0.07% (WRMS)
Frequency Response	30–16,000Hz (±3dB)/ 20–17,000Hz (FeCr tape) 30–16,000Hz (±3dB)/ 20–17,000Hz (CrO_2 tape) 30–14,000Hz (±3dB)/ 20–15,000Hz (Normal tape) (Dolby NR off)
Signal-to-Noise Ratio	53dB (Dolby NR off, CrO_2 or FeCr tape, CCIR/ARM weighted 1kHz) The S/N is improved by 9dB with Dolby NR on.
Total Harmonic Distortion	1.8% (at 1kHz, 0dB)
Erase Ratio	65dB (at 400Hz, +10dB)
Bias Frequency	85kHz
Fast Forward and Rewind Time	70 seconds (C-60 tape)
Input Sensitivity/ Impedance	
MIC	0.25mV/12k ohms
LINE	70mV/25k ohms
Output Level	
LINE	350mV
HEADPHONES	750mV

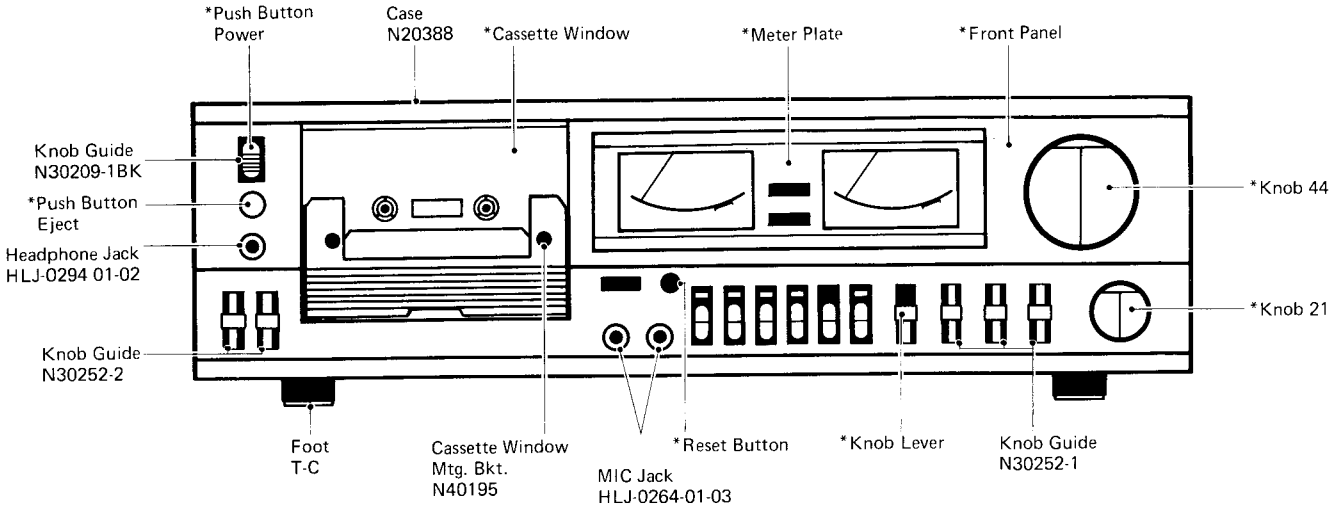
GENERAL

Power Consumption	40 watts
Power Supply	
Model MCD3000	110/220V AC, 50/60Hz
Model MCD3000B	120/240V AC, 50/60Hz
Dimensions	442(W) x 354(D) x 133(H) mm
Weight (Net)	7.2kg (15.9 lbs.)
Accessory	Shielded Audio Cables (2).

* DOLBY NR

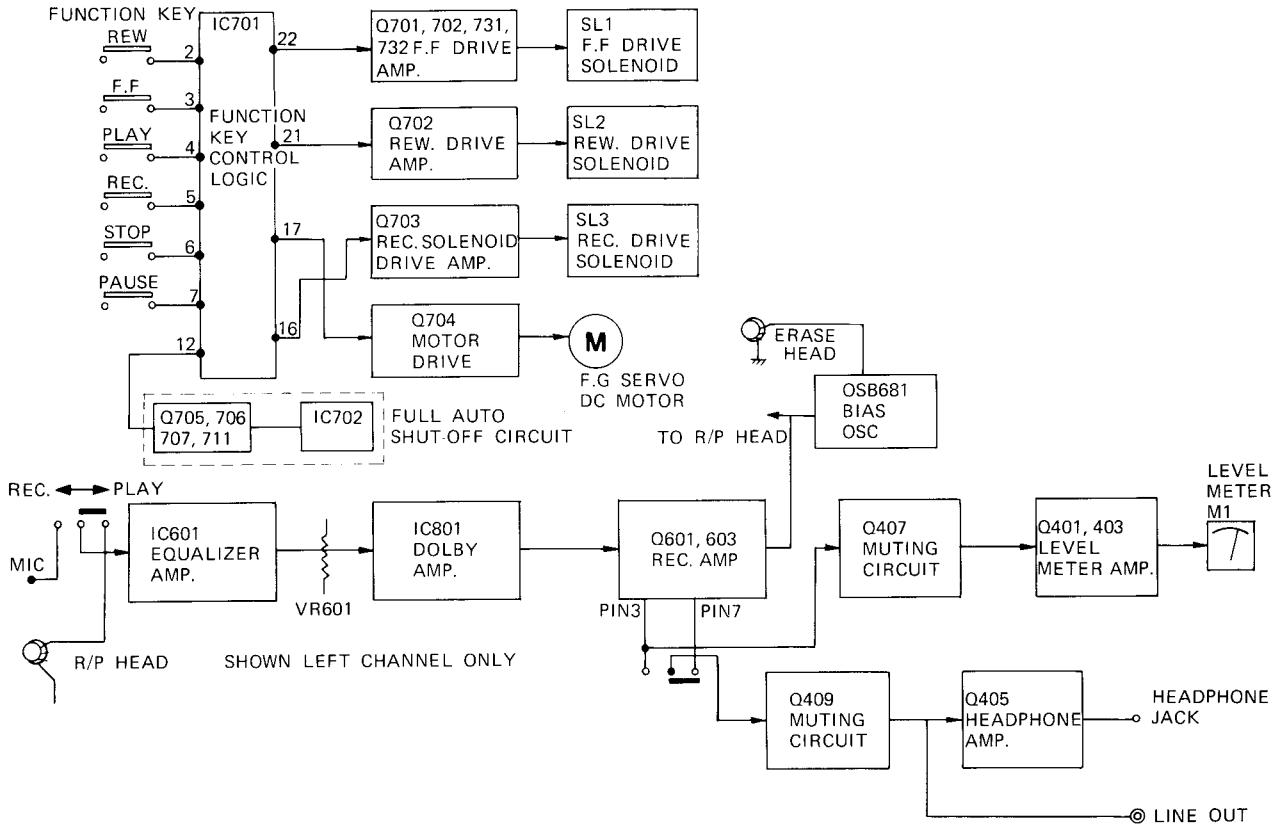
- Dolby NR under license from Dolby Laboratories.
- The word "DOLBY" and Double-D-Symbol are trademarks of Dolby Laboratories.

Specifications and design are subject to change without notice.



Note: Unknown Part No. are refer to List of Difference Point of Cassette Deck Family.

BLOCK DIAGRAM



VOLTAGE CONVERSION

MCD3000/C2000

220V AC → 110V AC

1. Disconnect the BLACK and WHITE wires from POWER SUPPLY P.C.B. No. 28 and 29.

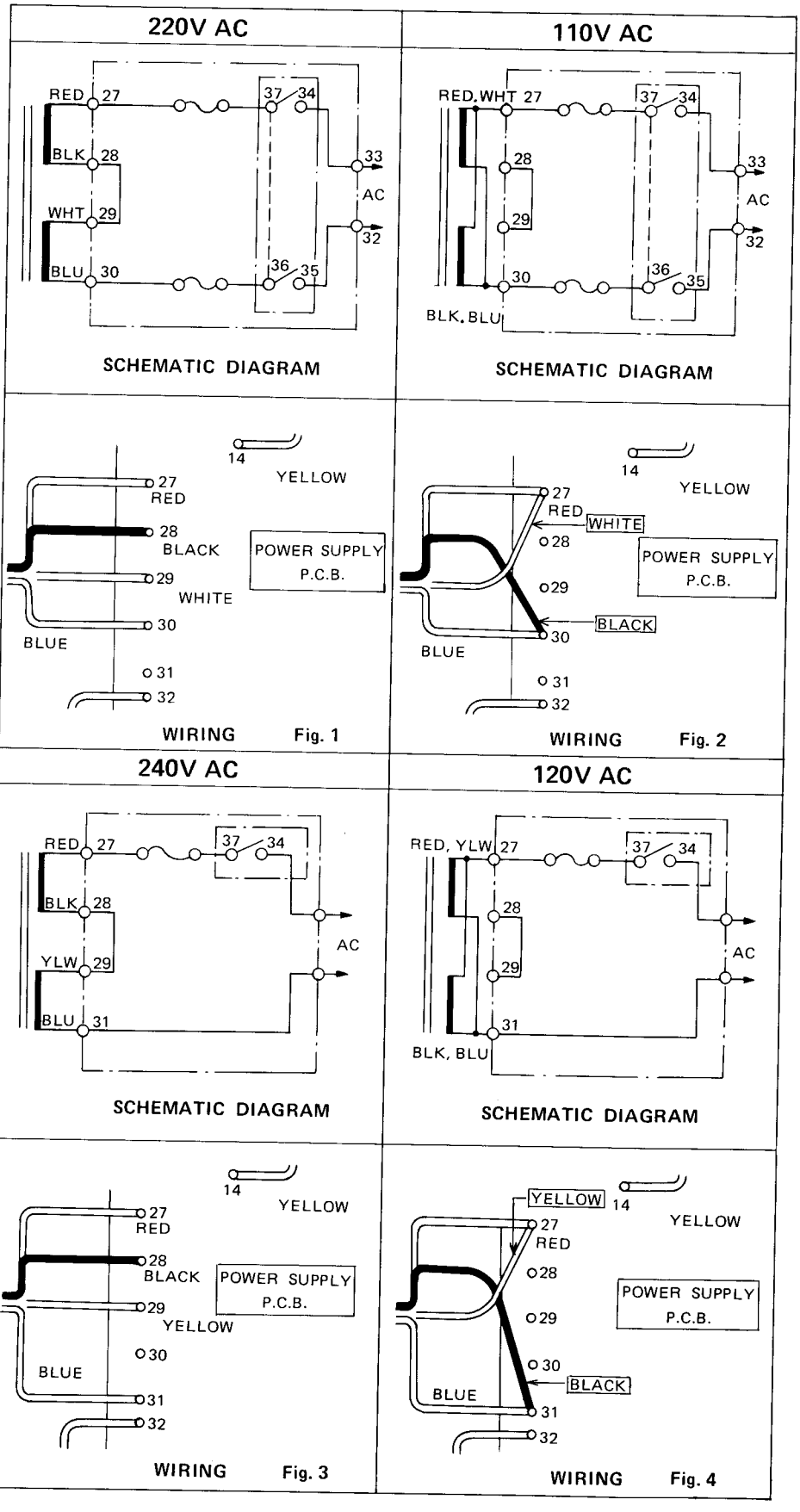
2. Connect the wires as shown in Fig. 2.

MCD3000B/

240V AC → 120V AC

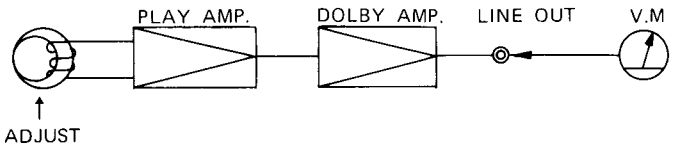
1. Follow the above step 1.

2. Connect the wires as shown in Fig. 4.



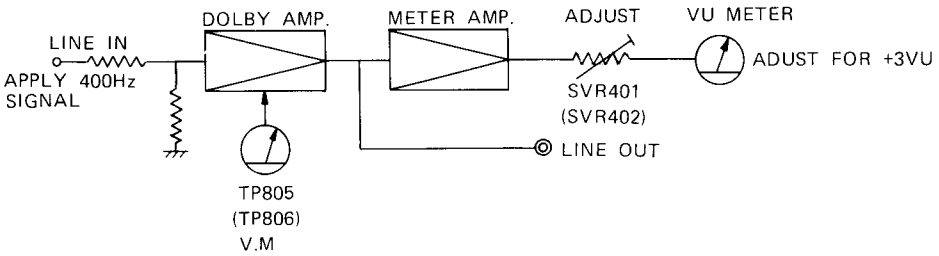
ALIGNMENT PROCEDURE

1) Head Azimuth



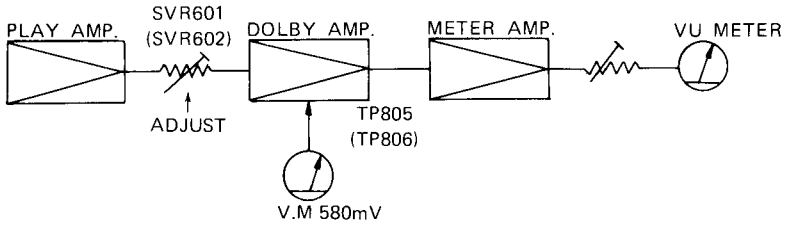
Controls to be positioned	Test Tape	Procedure
Dolby NR : OFF Equalizer : 120 s Function : PLAY Rec. Volume : Max. Balance Volume : Center	MTT-114	1) Adjust the head screw in order to obtain max. V.M. indication.

2) VU Meter



Controls to be positioned	Test Tape	Procedure
Dolby NR : OFF Equalizer : 120 s Function : REC.	Blank Normal	1) Apply 400Hz, 250mV signal at the LINE IN terminal. 2) Adjust REC. and BALANCE volume to have 580mV V.M. indication. 3) Set blank tape, then press the REC. button. 4) Set the VU meter indication to DOLBY LEVEL (double D mark position) with SVR401, 402.

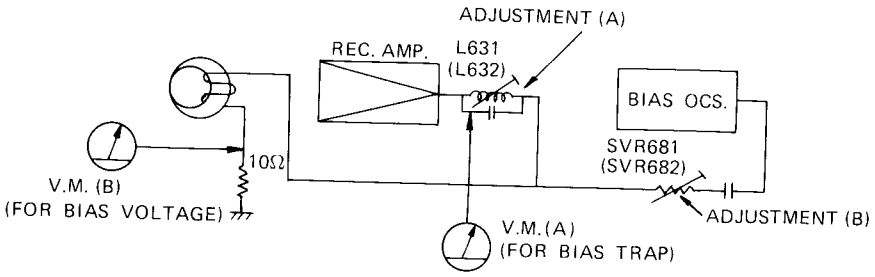
3) Play Back Level



Controls to be positioned	Test Tape	Procedure
Dolby NR : OFF Equalizer : 120 s Function : PLAY	MTT-150	1) Set the V.M. indication to 580mV with SVR601, 602 alignment.

ALIGNMENT PROCEDURE

4) Bias Trap / Bias Voltage



ADJUSTMENT (A) (BIAS TRAP)		
Controls to be positioned	Test Tape	Procedure
Dolby NR : OFF Equalizer : 70 s Function : REC. Tape Mode : CrO_2	Blank Normal	1) Adjusting L631, 632 to min. indication on the V.M. scale at the Test point of TP601 and 602. 2) V.M. indication should be less than 30mV after this alignment.

ADJUSTMENT (B) (BIAS VOLTAGE)

Dolby NR : OFF
Equalizer : 120 s
Tape Mode : Normal ↓ CrO_2 ↓ FeCr

Blank
Normal

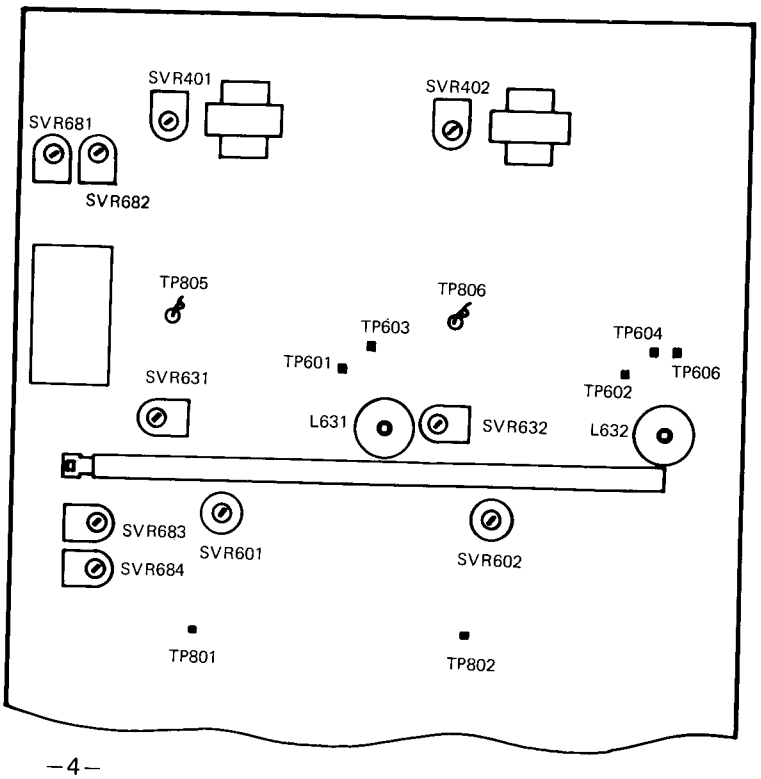
1) Adjust the bias voltages as follows.

Step	Tape Mode	Voltage	Adjust
1	Normal	3.7mV	SVR681 SVR682
2	CrO_2	5.5mV	SVR684
3	FeCr	4.2mV	SVR683

NOTE: Test tapes that required for the above alignment are all TEAC brand and please do not carry out these alignment without test tapes.

All uneven number of Test points and Carbon trimmers aligns for the LEFT channel, and the other numbers aligns for the RIGHT channel.

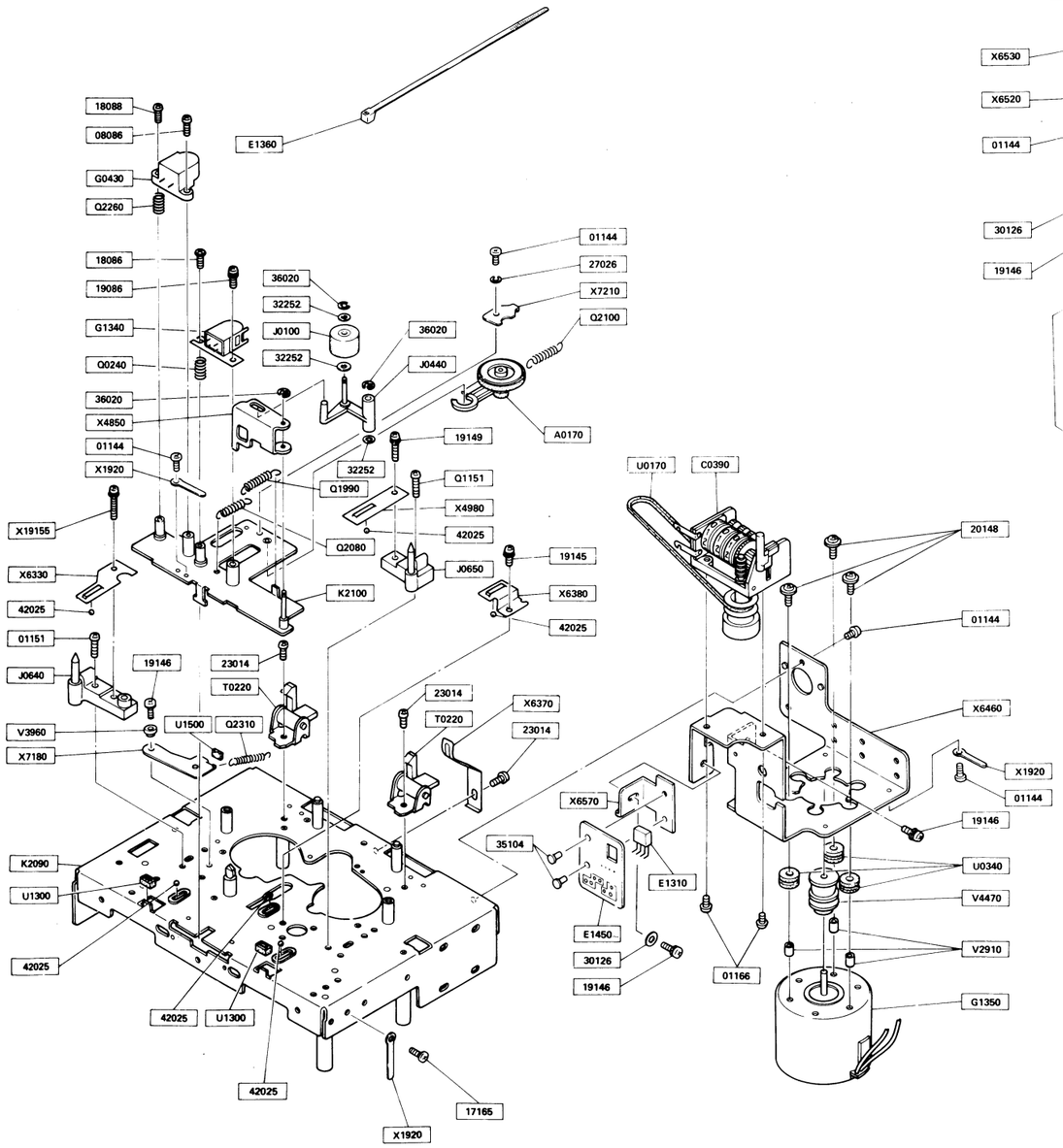
ALIGNMENT COMPONENT LAYOUT



PARTS LIST CASSETTE DECK MODEL CT-3309A

Parts No.	Description	Q'ty
A0170	Drive Arm Ass'y	1
A0180	Reel Ass'y SA	1
A0190	Reel Ass'y TA	1
A02000	Drive Pulley Ass'y	1
A0230	Soft Dumper Ass'y	1
C0390	Counter	1
E1360	S, K Binder	1
E1310	Hall Generator	1
F0130	Fly wheel M	1
G0430	Erase Head	1
G1340	R/P Head	1
G1350	Motor	1
J0100	Pinch Roller	1
J0280	Rew. Idler A	1
J0440	Pinch Roller Arm	1
J0460	Shaft Supporter G	1
J0640	Cass' Guide LA	1
J0650	Cass' Guide RA	1
J0670	Pulley (For String)	1
K1630	FF Idler Arm Ass'y	1
K1640	FF Action Arm Ass'y	1
K1660	Action Plate Ass'y	1
K2090	Chassis Ass'y	1
K2100	Head Panel Ass'y	1
K2360	Sub Chassis B	1
K2440	FF Lever Ass'y A	1
P0130	Solenoid Ass'y	2
Q0240	R/P Head Spring B	1
Q1990	Pinch Roller Spring	1
Q2010	FF Action Arm Spring	1
Q2020	Rew. Arm Spring A	1
Q2050	Brake Arm Spring RA	1
Q2060	Brake Arm Spring LA	1
Q2080	Action Plate Spring	1
Q2100	Drive Arm Spring	1
Q2110	Action Lever Spring	1
Q2140	Action Lever Spring	1
Q2150	Action Plate Spring	1
Q2260	Erase Head Spring	1
Q2310	Back Tension Spring	1
S0340	Micro Switch SS-5GL13	1
T0210	String Ass'y	1
T0220	Rec. Sensor Ass'y A	2
U0170	Counter Belt	1
U0340	Rubber Cushion	3
U0600	Adjusting Screw	1
U0840	Brake L	1
U0850	Brake R	1
U0860	Rubber (For Brake)	2
U0890	Reel Cap C	2
U1080	Drive Belt	1
U1300	Rubber Cushion C	2
U1310	Main Belt	1
U1500	Felt 1x6x4	1
V2910	Collar 2.8x3.5x5	1

Parts No.	Description	Q'ty
V3210	FF Idler Arm Collar	1
V3960	Case Lock Arm Collar	1
V4470	Motor Pulley	1
X1920	Lug E	3
X4110	Washer	1
X4580	Pressing Metal	1
X4910	Action Arm Bracket A	1
X4970	Action Arm A	1
X4980	Head Panel Pushing Plate G	1
X5040	Rew. Arm	1
X6330	Head Panel Pushing Plate J	1
X6340	Flywheel Supporter Q	1
X6350	Micro Switch Bracket	2
X6370	Cass' Hold Back Spring Plate	1
X6380	Head Panel Pushing Plate K	1
X6390	Solenoid Arm Guide A	1
X6400	Solenoid Arm RB	1
X6410	Solenoid Arm LB	1
X6460	Motor Holder R	1
X6570	IC Board Bracket A	1
X7140	Rew Lever	1
X7160	Lock Bracket B	1
X7180	Back Tension Brake C	1
X7210	Drive Arm Pushing Plate A	1
X7220	Supporting Plate For Brake A	2
01105	Screw 2.3x4	2
01111	Screw 2.3x10	2
01144	Screw 2.6x3	6
01151	Screw 2.6x10	2
01166	Screw 3x5	2
04085	Screw 2x4	1
17165	Screw 3x5	1
18086	Bind Screw 2x5	1
18088	Bind Screw 2x7	1
19145	Screw W/Spring Washer 2.6x4	1
19146	Screw W/Spring Washer 2.6x5	14
19149	Screw W/Spring Washer 2.6x8	2
19155	Screw W/Spring Washer 2.6x14	1
19166	Screw W/Spring Washer 3x5	4
20148	Screw W/Flat Washer 2.6x7	3
21046	Screw W/Flat Washer 2.6x4.5	2
21050	Screw W/Flat Washer 2.6x6.5	1
23007	Tapping Screw 2.6x6	3
23014	Tapping Screw 2.6x5	5
27026	Spring Washer M2.6	2
30126	Flat Washer 2.8x7.5x0.5	2
32201	P.S.W 2.1x4x0.13	1
32252	P.S.W 2.6x4.7x0.25	4
33077	Spring Pin 3x16	2
35104	Rivet 2x3	2
36015	E Ring E-1.5	2
36020	E Ring E-2.0	6
36025	E Ring E-2.5	2
42025	Steel Ball M2.5	6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08086
E1360
G0430
Q2260
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G1340
Q0240
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X4850
01144
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X19155
X6330
42025
01151
J0640
19146
V3960
X7180
K2090
U1300
42025
01144
27026
X7210
Q2100
36020
32252
J0100
32252
36020
J0440
A0170
19149
32252
Q1990
Q1151
X4980
42025
Q2080
J0650
19145
X6380
42025
K2100
23014
T0220
U1500
Q2310
23014
T0220
X6370
23014
42025
U1300
42025
17165
X1920
U0170
C0390
20148
01144
X6460
X1920
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G1350
X6570
35104
E1310
E1450
30126
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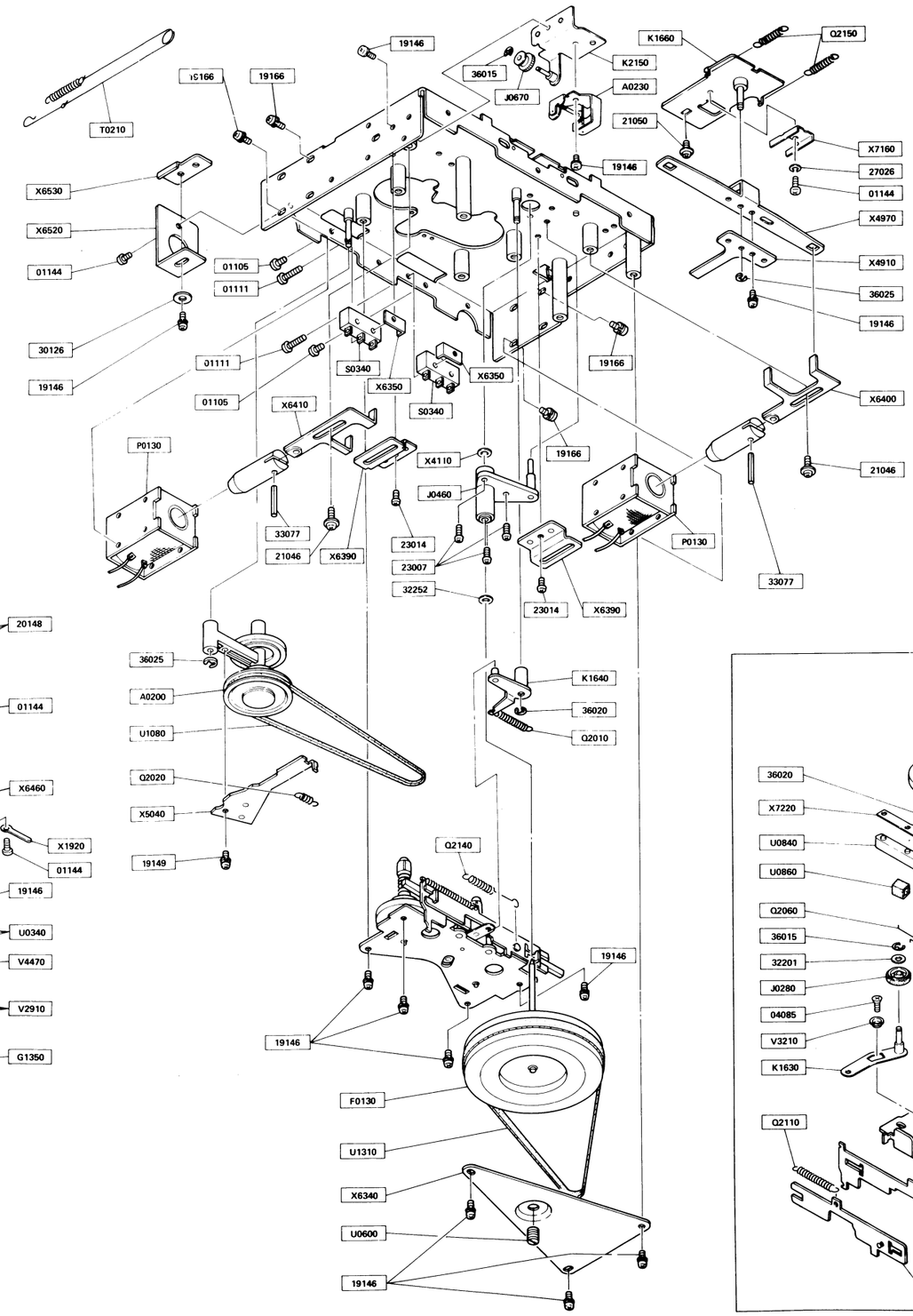
01166


T0210
19146
19166
36015
J0670
K1660
K2150
A0230
Q2150
21050
X7160
27026
01144
X4970
X4910
36025
19146
X6530
X6520
01144
30126
19146
01105
01111
01111
01105
S0340
X6350
X6350
S0340
X6410
P0130
X4110
19166
J0460
33077
21046
X6390
23014
23007
32252
23014
X6390
P0130
33077
X6400
21046
36025
A0200
U1080
Q2020
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Q2140
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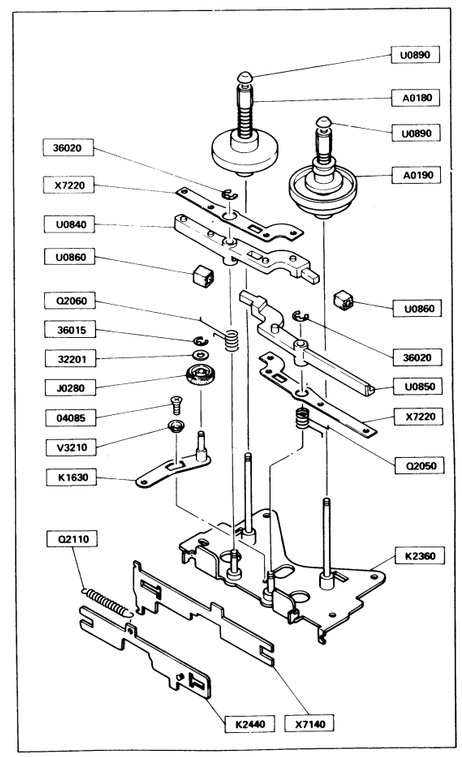
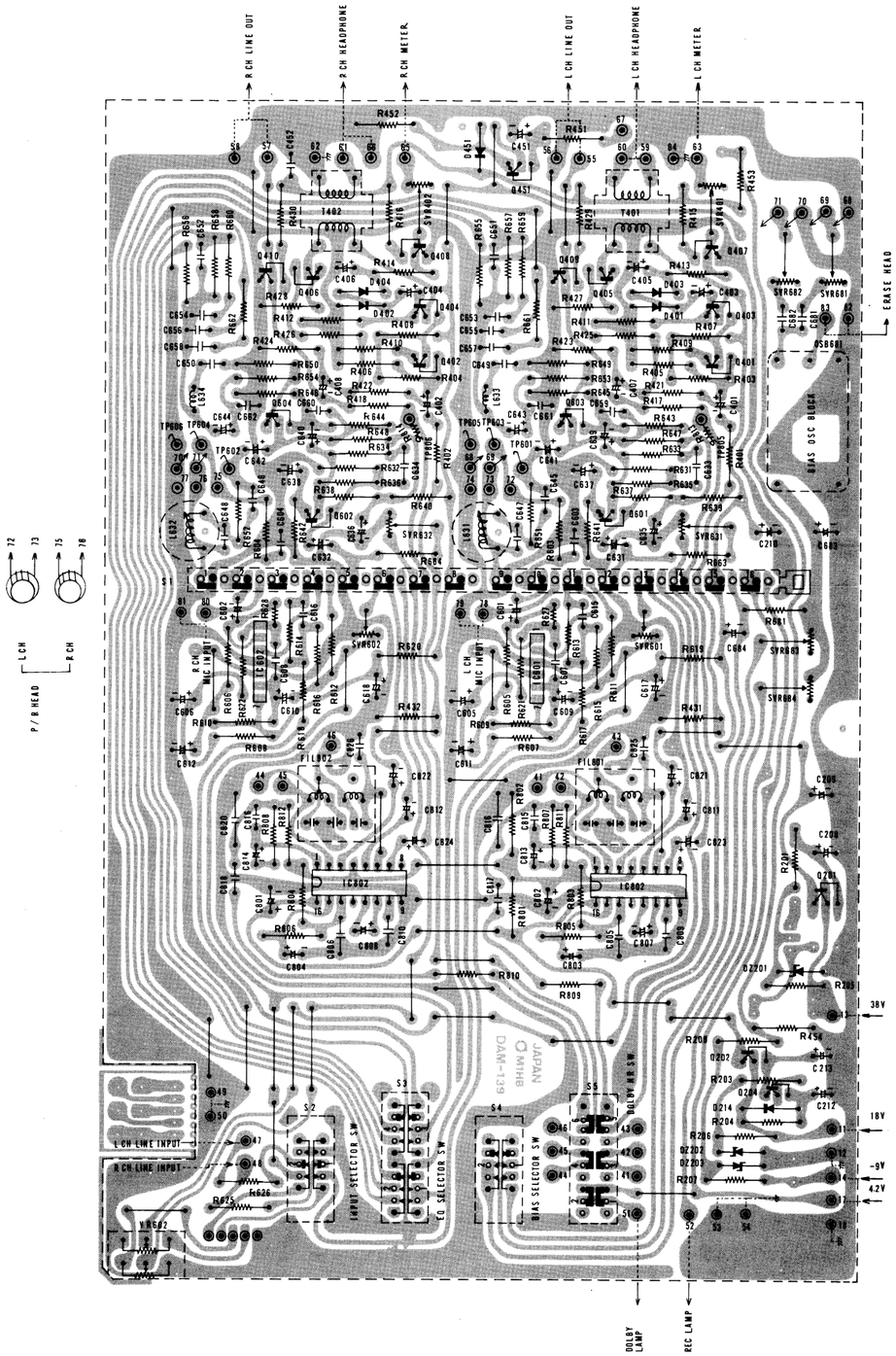
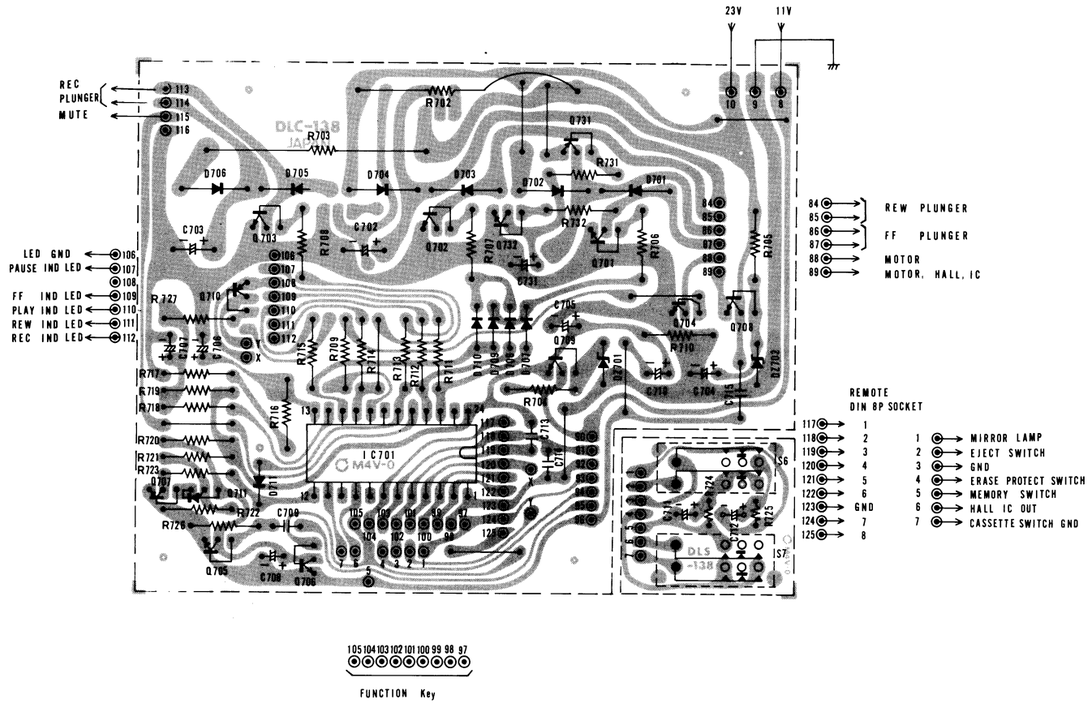
F0130
U1310
X6340
U0600
19146


U0890
A0180
U0890
A0190
36020
X7220
U0840
U0860
Q2060
36015
32201
J0280
04085
V3210
K1630
U0860
36020
U0850
X7220
Q2050
Q2110
K2360
K2440
X7140

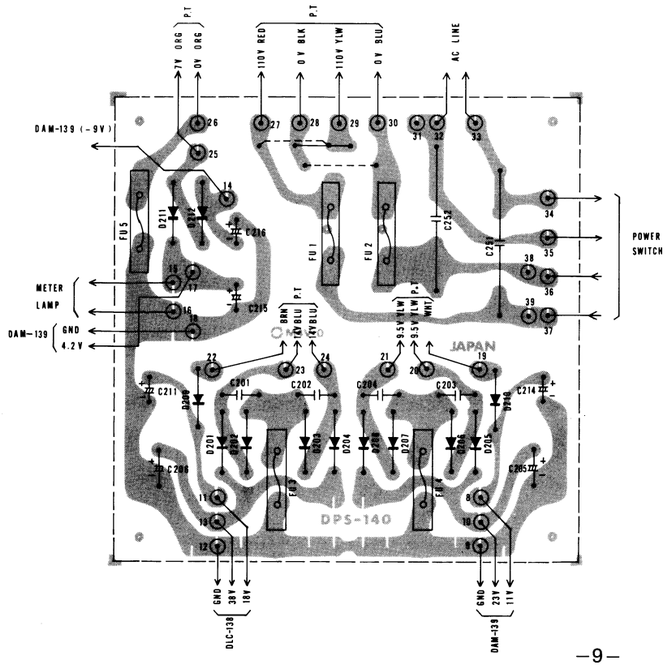
EQ: DOLBY NR. REC. AMP (DAM-139)



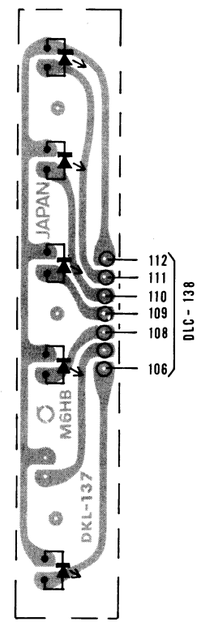
LOGIC CONTROL (DLC-138)



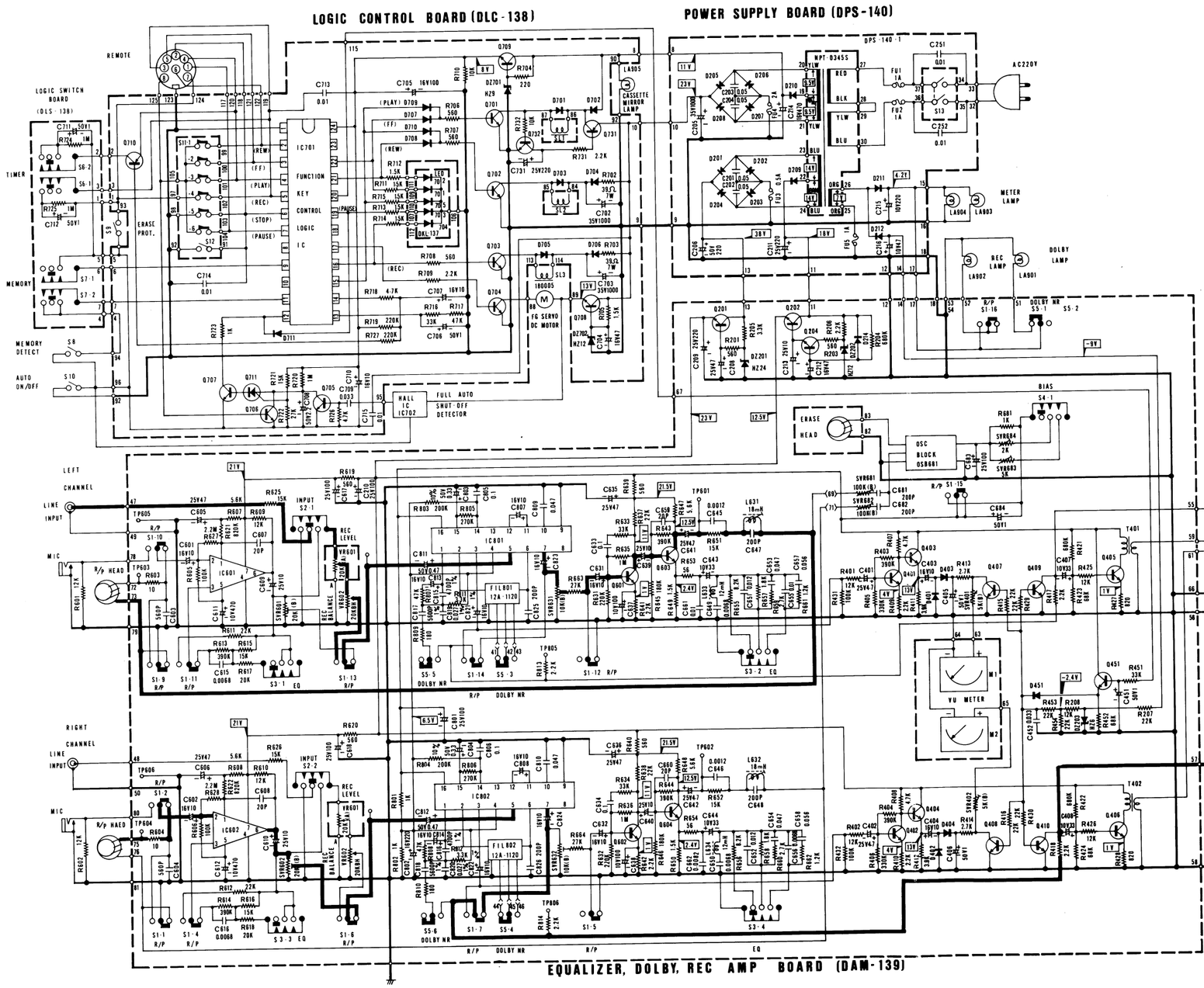
POWER SUPPLY (DPS-140)



LED P.C.B (DKL-137)



CIRCUIT DIAGRAM



S 1	REC/PLAY SWITCH	(PLAY)
S 2	INPUT SELECT SWITCH	(LINE)
S 3	EQ SELECT SWITCH	(NORMAL)
S 4	BIAS SELECT SWITCH	(NORMAL)
S 5	DOLBY NR SWITCH	(ON)
S 6	TIMER SWITCH REC/PLAY	(OFF)
S 7	MEMORY FUNCTION SWITCH	(OFF)
S 8	MEMORY DETECT SWITCH	(OFF)
S 9	ERASURE POTECT SWITCH	(OFF)
S 10	AUTOMATIC ON/OFF SWITCH WITH CASSETTE	(OFF)
S 11	FUNCTION KEY SWITCH	
S 12	EJECT SWITCH	(OFF)
S 13	POWER SWITCH	(OFF)

TA7122P	IC	601 602
NE646	IC	801 802
TC9121P	IC	701
DN838	IC	702
2SA564	Q	710
2SA963	Q	731
2SC828	Q	204, 601, 602, 603, 604, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 705, 706, 707, 732,
2SC1383	Q	202, 704, 708, 709,
2SC2209	Q	201, 702, 703,
N13T1	Q	711
1S188FM	D	401, 402, 403, 404,
GL9PR2	LED	701, 702, 703, 704, 705,
MA150(1S1555)	D	451, 707, 708, 709, 710, 711,
W03B (1N4002)	D	201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 214, 701, 702, 703, 704, 705, 706,

NOTE:

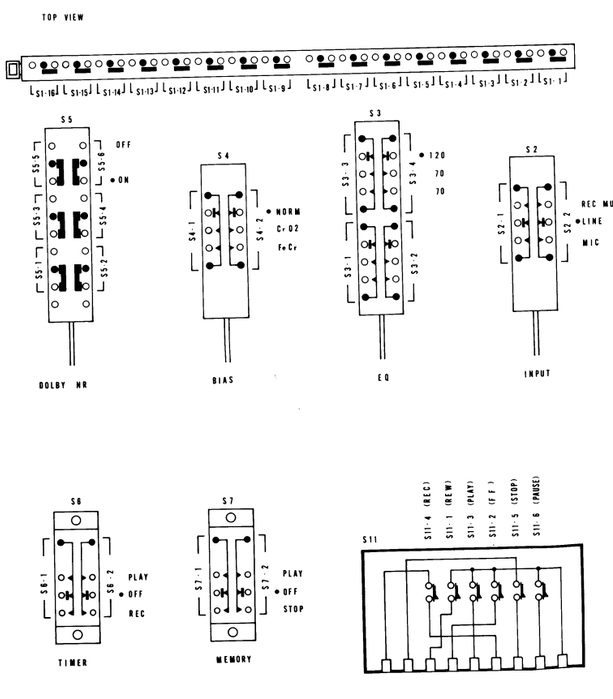
(1) All voltage reading were made under no signal conditions and may vary with signal applies.

(2) DC voltage measurement were taken with a high impedance input voltmeter from the point indicated to the chassis ground voltages may vary ±20%.

(3) Unless otherwise specified resistors are ¼ WATTS and capacitors in μF.

(4) ⏚ This symbol indicates ground.

(5) Bold line of left channel indicates route of the recording signal and right channel one indicates play back signal.



PARTS LIST

Part No.	Description	Symbol No.	Q'ty a set
INTEGRATED CIRCUIT & TRANSISTORS			
TC9121P	LSI	IC701	1
TA7172AP	IC	IC601, 602	2
2SA564(QR)	Transistor	Q710	1
2SA963(QR)	Transistor	Q731	1
2SC828(QR)	Transistor	Q204, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 451, 601, 602, 603, 604, 705, 706, 707, 732	20
2SC1383(QR)	Transistor	Q202, 704, 708, 709	4
2SC2209(QR)	Transistor	Q201, 701, 702, 703	4
N13T1	P.U.T.	Q711	1
DIODES			
1S188FM	Germanium Diode	D401, 402, 403, 404	4
1S1555	Silicon Diode	D451, 707, 708, 709, 710, 711	6
W03B	Silicon Diode	D201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 214, 701, 702, 703, 704, 705, 706	19
HZ6-3-A	Zener Diode	DZ203	1
HZ9-2-B	Zener Diode	DZ701	1
HZ12-3-C	Zener Diode	DZ202, 702	1
HZ24-3	Zener Diode	DZ201	1
GL-9PR2	LED	LED701, 702, 703, 704, 705	5
CONTROLS			
EWK-HWA332A24	Potentiometer	VR601	1
EWK-G4A323703	Potentiometer	VR602	1
EVT R4A00B24	Carbon Trimmer	SVR601, 602	2
2K(B), 8ϕ	Carbon Trimmer	SVR684	1
5K(B)	Carbon Trimmer	SVR401, 402, 683	3
10K(B)	Carbon Trimmer	SVR631, 632	2
100K(B)	Carbon Trimmer	SVR681, 682	2
SWITCHES			
ESD-81541	Slide Switch	S1	1
SW4235012	Lever Switch	S2, 4	2
SW4435013	Lever Switch	S3	1
SW4652014	Lever Switch	S5	1
ESL-2425	Lever Switch	S6, 7	2
LSA-1139	Leaf Switch	S12	1
1* HKW0141-01-010	Function Button Unit Ass'y	S11	1
2* ESB7079	AC ON/OFF Switch	S13 For Model MCD3000	1
BIAS OSC. UNIT			
53T-003	Bias OSC. Unit		1
FILTER			
12A-1120	Filter, 19kHz	FIL801, 802	2
COILS & TRANSFORMERS			
3* NPT-0345S	Power Transformer	For Model MCD3000	1
162005	Output Transformer	T401, 402	2
1.8mH	Variable Inductor	L631, 632	2
1.2mH	Inductor	L633, 634	2

Part No.	Description	Symbol No.	Q'ty a set
CONNECTORS & TERMINALS			
HLJ-0294-01-02	Headphone Jack		1
HLJ-0264-01-03	Mic Jack		2
CS-280-1-13	8 Hole DIN Socket		1
N41274	4-Pin Jack		1
MC04-013	Micro Connector Ass'y	4-Pin	1
MC06-014	Micro Connector Ass'y	6-Pin	1
MC07-015	Micro Connector Ass'y	7-Pin	1
MC07-016	Micro Connector Ass'y	7-Pin	1
MC09-017	Micro Connector Ass'y	9-Pin	1
MC09-018	Micro Connector Ass'y	9-Pin	1
171825-4	Micro Plug, 4-Pin		1
171825-6	Micro Plug, 6-Pin		1
171825-7	Micro Plug, 7-Pin		2
171825-9	Micro Plug, 9-Pin		2
SR3P-4	Strain Relief, Line Cord		1
PC-002	Audio Cable		1
4* ACC-010	Line Cord		1
PRINTED CIRCUIT BOARD			
D.A. M-139	Amplifier P.C.B.		1
D.L. C-138	Logic Control P.C.B.		1
D.L. S-138-1	Logic Switch P.C.B.		1
D.P. S-140	Power Supply P.C.B.		1
SOLENOID			
180005	Solenoid	SL3	1
FUSES, METERS & LAMPS			
2A 5ϕ x 20	Fuse	FU4	1
0.5A 5ϕ x 20	Fuse	FU3	1
5* 1A 5ϕ x 20	Fuse	FU1, 2, 5	3
6* KL-258T-6	Level Meter (Silver)	M1, 2	2
BQ044-23633A	Lamp	LA901, 902	2
BQ141-26404A	Lamp, Meter	LA903, 904	2
PL12306002A	Lamp	LA905	1
FUSE HOLDERS			
S-N5053	Fuse Holder		10
RESISTORS			
¼W 3.3KΩ	Metal Film Resistor	R811, 812	2
7W 39Ω	Wire-Wound Resistor	R702, 703	2
CAPACITORS			
20pF	Ceramic Capacitor	C607, 608, 659, 660	4
200pF	Ceramic Capacitor	C647, 648, 681, 682, 825, 826	6
MC0.01μF	Ceramic Capacitor	C713, 714, 715	3
SC0.005μF	Ceramic Capacitor	C201, 202, 203, 204	4
ECQ-P 1472FZ	Polypropylene	C815, 816	2
ECQ-P 1562FZ	Polypropylene	C817, 818	2
ECQ-P 1273FZ	Polypropylene	C819, 820	2
560pF	Polystyrene	C603, 604	2
7* ECNC4A 103M	Oil	C251, 252	2
50V 0.0012μF	Mylar (±5%)	C645, 646	2
50V 0.0068μF	Mylar (±5%)	C615, 616, 649, 650, 656	5
50V 0.0082μF	Mylar (±5%)	C662	1
50V 0.01μF	Mylar (±5%)	C655, 661	2
50V 0.012μF	Mylar (±5%)	C651, 652	2
50V 0.047μF	Mylar (±5%)	C653, 654, 809, 810	4

PARTS LIST

Part No.	Description	Symbol No.	Q'ty a set
50V 0.056μF	Mylar (±5%)	C657, 658	2
50V 0.1μF	Mylar (±5%)	C633, 634, 805, 806	4
50V 0.033μF	Mylar (±20%)	C452, 709	2
ECEA50MR33	Electrolytic (0.33M)	C803, 804	2
ECEA50MR47R	Electrolytic (0.47M)	C811, 812	2
ECEA16M10R	Electrolytic (10M)	C601, 602	2
10TW 47μF	Electrolytic	C216	1
10TW 100μF	Electrolytic	C637, 638	2
10TW 220μF	Electrolytic	C215	1
10TW 470μF	Electrolytic	C611, 612	2
10TW 33μF	Electrolytic	C407, 408, 643, 644	4
16TW 10μF	Electrolytic	C403, 404, 631, 707, 710, 807, 813, 814, 821, 823, 824, 822, 808, 632	14
16TW 47μF	Electrolytic	C212, 704	2
16TW 100μF	Electrolytic	C705	1
16TW 220μF	Electrolytic	C802	1
16TW 470μF	Electrolytic	C214	1
25TW 4.7μF	Electrolytic	C401, 402, 641, 642	4
25TW 10μF	Electrolytic	C213, 609, 610, 639, 640	5
25TW 47μF	Electrolytic	C208, 605, 606, 635, 636	5
25TW 100μF	Electrolytic	C210, 617, 618, 683, 801	5
25TW 220μF	Electrolytic	C209, 211, 731	3
35TW 1000μF	Electrolytic	C205, 703, 707	3
50TW 1μF	Electrolytic	C405, 406, 451, 684, 706, 711, 712	7
50TW 2.2μF	Electrolytic	C708	1
50TW 220μF	Electrolytic	C206	1
APPEARANCE PARTS			
8* N10078	Front Panel		1
9* N20394	Rear Panel		1
N41095	Cass' Window Mtg. Bkt.		1
10* N20395	Cass' Holder		1
N30252-2	Knob Guide	Timer, Memory Switch	1
N30252-1	Knob Guide	Bias, EQ, Input Switch	3
N30253-1	Knob Guide	Dolby NR Switch	1
N30209-1BK	Knob Guide	Power ON/OFF Switch	1
N41232	Side Cap, Right		1
N41233	Side Cap, Left		1
11* N41101	Push Button, Power	Power	1
12* N41265	Push Button, Eject	Eject	1
13* N30254A	Knob, Lever		6
14* N41291	Reset Button		1
15* N41234	Knob 21	Rec. Balance	1
16* N41217	Knob 44	Rec. Level	1
N30248	Cass' Compartment		1
17* N30251	Meter Plate		1
N41266	Top Cover	Cass' Holder	1
N41293	Alum. Plate	Logic Cont.	1
N41212	Meter Window		1
18* N41250	Cass' Window		1
N41109	Counter Window		1
N20388	Case		1
T-C	Foot		4
MISCEEANEOUS			
N41310	Switch Shaft	Power	1
N41261	Shaft Coupler	Front	1
N41262	Shaft Coupler	Rear	1
N41283	Eject Spring		1
N41294	Spring A		1
N41295	Spring B		1
N41258	Cass' Holding Spring		1
19* OM-107	Instruction Book		1
PACKING MATERIAL			
N41318	Poly. Bag	For Unit	1
N40487	Poly. Bag	For Inst. Book	1
N20389	Pad, Right		1
N20390A	Pad, Left		1
N41422	Pad, Top		1
20* N41332	Carbon		1

NOTE: * Mark parts can be available for the Model MCD 3000 only and for the other Models refer to the List of differance point of the Cassette Deck Family.

DIFFERANCE POINTS OF THE CASSETTE DECK FAMILY

Ref. No.	Item \ Model	MCD3000B	C2000
1	Function Button Unit Ass'y		HKW0141-01-020
2	AC ON/OFF Switch	ESB 709	
3	Power Trans.	NPT-0341S	
4	Line Cord	ACC-002	
5	Fuse Fu4		
	Fuse Fu1		
	Fuse Fu2	NIL	
	Fuse Fu3		
	Fuse Fu5		
6	Lever Meter		KL-258T-10
7	Noise Erasing	Polystor	
	Capacitor C251, 252	ECQ-2A 103MZ	
8	Front Panel		N10088
9	Rear Panel	20394A	N20417A
10	Cass' Holder		N20395-BK
11	Push Button, Power		N41101-BK
12	Push Button, Eject		N41265-BK
13	Knob, Lever		N30254-BK
14	Reset Button		N41291
15	Knob 21, Rec. Bal.		N41352
16	Knob 44, Rec. Level		N41351
17	Meter Plate		N30251-BK
18	Cass' Window		N41250-BK
19	Instruction Book		OM-126
20	Carton	—	N41340

Note: Unknown Parts No. are same as Model MCD3000.